Continued Work on COVID-19

One year after the start of the pandemic, most of GeMVi’s work continue to be directed toward COVID-19-related activity that include testing samples, sequencing, modelling and training.

The following contributions have been made by the group so far:

Enhancing Kenya’s emergency response to the outbreak through contributing expertise in modelling and sequencing.

Contributing to Kenya’s National COVID-19 Modelling Technical Committee that evaluates countrywide modelling output to develop messages to inform policy decisions by the Ministry of Health.

Developing Kenya-specific forecasting models in collaboration with modellers and epidemiologists at KWTRP’s Health Economics Research Unit to extend this work and link it to health service capacity and economic impact modelling.

The Ugandan modelling team has been engaging with the Ministry of Health in Uganda to review modelling work in the country.

GeMVi Fellows have been contributing to the SARS-CoV-2 laboratory diagnostics and sequencing efforts at the National Public Health Laboratories in Kenya, Uganda Virus Research Institute in Uganda and Kilimanjaro Clinical Research Institute in Tanzania.

GeMVi Fellow, Mziray Shabani, part of a team that has been tasked to conduct COVID-19 sequencing by the Ministry of Health in Tanzania.
The GeMVi team has contributed to the following publications during the COVID-19 pandemic period:

**Articles**

- Spatially-resolved simulations of the spread of COVID-19 in European countries
- Pooled testing conserves SARS-CoV-2 laboratory resources and improves test turn-around time: experience on the Kenyan Coast
- Tracking the introduction and spread of SARS-CoV-2 in coastal Kenya
- Surveillance of endemic human coronaviruses (HCoV-NL63, OC43 and 229E) associated with childhood pneumonia in Kilifi, Kenya

**Policy Briefs**

- Projections of COVID-19 Cases and Deaths Following School Reopening
- Detection of SARS-CoV-2 Variant 501Y.V1 in Coastal Kenya
- Detection of SARS-CoV-2 Variant 501Y.V2 (South African origin) in Coastal Kenya
- Detection of SARS-CoV-2 Variant 501Y.V2 (variant of concern) in Comoros Islands
- SARS-CoV-2 genomic diversity in Kenya, June-October 2020

**Newspaper Articles**

- KEMRI warns of 16 new coronavirus variants in Kenya
- Kenyan COVID Variant Seen as Similar Enough for Vaccine to Work
- Kenyan Scientists Discover New Coronavirus Mutation
- Kenya virus mutation has too few changes to be called a new variant
- New coronavirus variant could be circulating in Kenya, KEMRI warns
- Kenya says it has detected SA COVID-19 variant

Visit the webpage listing the publications by the GeMVi team at [https://gemvi.kemri-wellcome.org/covid-19/](https://gemvi.kemri-wellcome.org/covid-19/)
GeMVi Research Fellowships

Fellows Virtual Meetings

Work by GeMVi Research Fellows continue to pick up and get back on track. To maintain contact with the Fellows at the various institutions in East Africa and offer support for them, we are now holding two monthly virtual meetings – one for the Modelling Group and another for the Bioinformatics and Sequencing Group. So far, we have held five meetings in which Research Fellows present their work, get feedback from Fellows and Supervisors and raise issues concerning the progress of their work.

Third Round of GeMVi Fellowships

The third call for GeMVi Sequencing, Bioinformatics and Modelling Fellowships are now open. Emphasis will be placed on COVID related projects. For further information visit the GeMVi website at https://gemvi.kemri-wellcome.org/

Training Conducted by the GeMVi Team

The GeMVi team continues to engage in collaboration with and training of staff from various institutions in Kenya, Tanzania and Rwanda. The group will be hosting a team from the Rwanda Biomedical Centre from the 21st – 31st March for training on SARS-CoV-2 sequencing and bioinformatics.

Other groups that have been trained in sequencing using the Oxford Nanopore Technology (ONT) MinION platform include:

- Kenya National Public Health Laboratory (NPHL)
- KEMRI Centre for Virus Research
- KEMRI Centre for Biotechnology Research and Development
- KEMRI Center for Global Health Research
- Africa CDC - ONT participants from 7 countries
A series of half-day virtual workshops on infectious disease modelling have been progressing well. So far, one pilot session and six workshops have been delivered and two more sessions are planned. Typically, about 30 participants attend each session and have access to the material and recording of workshops via a Microsoft Teams channel. The following workshops have been run over the past year:

<table>
<thead>
<tr>
<th>#</th>
<th>Session</th>
<th>Topic</th>
<th>Date</th>
<th>By</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pilot workshop</td>
<td>Deterministic SIR (Susceptible–Infected–Removed)</td>
<td>12-02-2020</td>
<td>Rabia Aziza and Joe Hilton</td>
</tr>
<tr>
<td>2</td>
<td>Workshop 1</td>
<td>Deterministic SIR (Susceptible–Infected–Removed)</td>
<td>02-12-2020</td>
<td>Rabia Aziza</td>
</tr>
<tr>
<td>3</td>
<td>Workshop 2</td>
<td>Maximum likelihood estimation</td>
<td>16-12-2020</td>
<td>Joe Hilton</td>
</tr>
<tr>
<td>4</td>
<td>Workshop 3</td>
<td>Stochastic modelling</td>
<td>20-01-2021</td>
<td>Rabia Aziza</td>
</tr>
<tr>
<td>5</td>
<td>Workshop 4</td>
<td>Spatial spread – Part I</td>
<td>03-02-2021</td>
<td>Andrea Parisi</td>
</tr>
<tr>
<td>6</td>
<td>Workshop 5</td>
<td>Spatial spread – Part II</td>
<td>17-02-2021</td>
<td>Andrea Parisi</td>
</tr>
<tr>
<td>7</td>
<td>Workshop 6</td>
<td>Fitting to flu data</td>
<td>10-03-2021</td>
<td>Sam Brand</td>
</tr>
</tbody>
</table>

The workshops are delivered by the GeMVi modelling team. They aim to build capacity in modelling infectious diseases in East-African universities. To date, over 120 participants from the following universities have participated:

- Kenyatta University
- Maseno University
- Strathmore University
- JKUAT University
- University of Nairobi
- UNITID
- AIMS University
- Machakos University
- SACEMA
- Makerere University
- Uganda Virus Research Institute
- University of Cape Town

Some participants have reported that they are using materials from the workshops in their own teaching as well as adopting the teaching style of the sessions that employ the use of electronic notebooks and are practical in nature.

Workshop materials are available to all in a public repository: [https://github.com/Rabia-git/GeMViCapacityBuildingCourse](https://github.com/Rabia-git/GeMViCapacityBuildingCourse)

**Upcoming Events**

Given the pandemic it is not possible, at the moment, to set precise dates for forthcoming events, however we propose convening the following major events in the coming months:

<table>
<thead>
<tr>
<th>Event</th>
<th>Tentative Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>GeMVi Dissemination Workshop (Virtual)</td>
<td>May, 2021</td>
</tr>
<tr>
<td>East African Virus Genomics &amp; Bioinformatics Workshop (Virtual)</td>
<td>May, 2021</td>
</tr>
</tbody>
</table>
GeMVi Dissemination Workshop

We propose holding a virtual workshop, tentatively, in May 2021. During the workshop both Round 1 and 2 Fellows will report on their research and present their findings. We plan to invite various stakeholders to link in including members of the Independent Advisory Group. This will coincide with the East African Virus Genomics and Bioinformatics Workshop with UVRI and new collaborators from the University Glasgow’s Centre for Virus Research (CVR).

East African Virus Genomics & Bioinformatics Workshop

The workshop planned for May 2021 is scheduled to take place virtually. It will focus on the bioinformatics of pathogen surveillance with the aim of sharing working experience and expertise and promoting additional collaborations. In addition, it will support specific next generation sequencing (NGS) wet lab training and a basic Python course. The workshop is funded through the GCRF University of Glasgow Centre for Virus Research collaboration grant. For further information on the workshop please contact us.

Bioinformatics Server at KCRI

The above server was procured through the GeMVi project for use at the Kilimanjaro Clinical Research Institute.

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